

Remarks

Section 112, ¶ 2 Rejections

Claims 1-22 were rejected under 35 U.S.C. § 112, ¶ 2 as indefinite. The Applicant responds to each by the remarks herein, and requests that they be withdrawn.

Claim 1. The Examiner maintains the rejection of Claim 1 as indefinite due to the phrase “wherein raising or lowering the reaction temperature narrows or broadens the Mw/Mn of the polyolefin, respectively”, citing *Ex parte Slob*, 157 USPQ 172 (Bd. Pat. Appl. & Int. 1967). The Applicant distinguishes the holding in *Slob*, as the court in *Slob* dealt with a claim limitation that, by itself, described a component of a claimed composition in terms that was held to be overly broad and thus indefinite. In the present invention, Applicant uses the objected-to-phrase to further modify existing claim limitations (process limitations, genus of catalyst structure, etc). The Examiner does not object to the these portions of Claim 1 as indefinite, thus, a phrase used to modify that claim in such a way to further define and limit that claim cannot be said to be indefinite under 35 U.S.C. § 112 unless the objected-to-phrase itself is indefinite.

Stated another way, unlike the holding in *Slob* that “the expression [is] too broad as it appears to read upon materials that could not possibly be used with [the composition]”, *Id* at 173, the phrase “wherein raising or lowering the reaction temperature narrows or broadens the Mw/Mn of the polyolefin, respectively” in present Claim 1 does not “read upon materials” that could not be used in the claimed process.

The Applicant contends that one skilled in the art, in light of the specification as filed, would readily understand the claimed invention: “A process of polymerizing olefin(s) to produce a polyolefin comprising contacting in a reactor olefins and a catalyst composition comprising at least one activator, a Group 15 containing compound and a bulky ligand metallocene catalyst compound at a reaction temperature of from 30°C to 120°C”, in conjunction with the objected-to-phrase and further detailed description. The Claim language makes clear what the “reaction temperature” range is, and one skilled in the art certainly knows the general nature of a “reaction

temperature” in olefin polymerization processes, and how to raise or lower that temperature. Thus, the Examiner’s use of the holding in *Slob* is misplaced, and this rejection should be withdrawn.

Claim 1. The Examiner points out that in the case when R¹ and R² are “interconnected”, the valency must “be more than divalent”. The Applicant maintains that one skilled in the art would readily understand the valences of the various groups defining R¹ and R². Nonetheless, the Applicant amends Claim 1 to describe a distinct embodiment of the invention, thus removing the phrase “silicon, germanium, tin, lead, or phosphorus”.

Claims 9-15. The Examiner rejects these claims, also citing *Slob*. In *Slob*, the patent claim at issue was directed to a “process for the preparation of a strong, hard surface, rapidly disintegrating and dissolving detergent tablet”, and in particular, the claim limitation at issue was:

a liquefiable substance having a liquefaction temperature from about 40 °C. to about 300 °C. and being compatible with the ingredients in the powdered detergent composition

The court in *Slob* held that this phrase was indefinite under 35 U.S.C. 112 because it encompassed “substances” that “will not give rise to a suitable preparation for detergent or laundry purposes”. *Id* at 173.

Applicant’s Claims 9-15 can be distinguished from those dealt with in *Slob*, as Applicant is describing in these claims the range of desirable properties of the polyolefins that can result from the proposed process of Claim 1 and the intervening claims therein, thus adding further definition to Claim 1. This is essentially the reverse of the claim held as indefinite in *Slob*, as the present Applicant has claimed a definite process for making polyolefins, the dependent claims simply further defining the “polyolefins” resulting therefrom in various, narrowing embodiments. For example, Claim 9 states:

wherein a polyethylene copolymer is isolated having a bimodal molecular weight distribution; and wherein the Mw/Mn value of the copolymer ranges from 20 to 40

This limitation does not encompass embodiments that would not result from the claimed “process of polymerizing olefin(s) to produce a polyolefin”. Thus, the Applicant believes the reliance on *Slob* in this rejection is misplaced, and requests that this rejection be withdrawn.

Section 102 Rejection

Claims 1-22 were rejected under 35 U.S.C. § 102(a) as anticipated by JP-10-330412 (*Sugimura*). An English language translation is enclosed. The Applicant traverses this rejection, as there is no disclosure of the step of “raising or lowering the reaction temperature narrows or broadens the Mw/Mn of the polyolefin, respectively” as is claimed, or would have been inherent from that disclosure. At paragraph [0206] of the English language translation of *Sugimura* as provided to the Examiner, it states

[t]he molecular weight of the olefin polymer product can be controlled by the addition of hydrogen to the polymerization system or by varying the polymerization temperature. (*Sugimura* at ¶ [0206])

However, this does not teach the Applicant’s claim limitation, where, as claimed, raising the temperature narrows the Mw/Mn, and lowering the temperature broadens the Mw/Mn of the polyolefin. The Applicant’s claimed invention is not disclosed nor inherent from a reading of *Sugimura*. Withdrawal of this rejection is requested.

Section 103 Rejection

Claims 1-22 were rejected under 35 U.S.C. § 103(a) as unpatentable over *Sugimura* in view of each of *Schrock et al* (US 5,889,128), *McConville* (US 6,271,325), and *Liang et al.* (JACS 1999). This rejection is traversed.

Claim 1 is amended to remove the embodiment wherein the metal “M” is only two-coordinate with respect to “Y” and “Z” (second formula). The limitation to “L*” is removed as superfluous in light of the removal of the second formula in Claim 1.

Sugimura demonstrates the use of compounds two-coordinate in "Group 15 atoms"; *Sugimura* does not particularly demonstrate the usefulness of the "Group 15 containing metal compounds" as Applicant claims, nor the other claim limitations as described above. As the Examiner has pointed out, the chemical arts, in particular, those relating to catalyst compositions, are unpredictable. Thus, general disclosures, and even specific embodiments outside the scope of patent claims, do not render those claims obvious without some motivation in combining references to arrive at the claimed invention coupled with the expectation of success, elements required to show obviousness. Applicant contends that none of *Liang*, *McConville* or *Schrock* (1) teach or suggest all of the claim limitations in Applicant's Claim 1, (2) provide motivation to use the claimed catalysts in a process where increasing the reaction temperature results in the preparation of a polyolefin having a narrower Mw/Mn relative to that obtained at a higher temperature, nor (3) provide the requisite expectation of success.

In the Action of March 12, 2004, the Examiner on page 6 states as motivation for combining the above references:

It would have been obvious to one of ordinary skill in the art to apply the teachings of any of Schrock, McConville, or Liang to the disclosure of Sugimura with a reasonable expectation of obtaining a highly-useful olefin polymerization process with the advantage of the process providing block copolymers of low polydispersity.

The Applicant contends that this statement does not provide "a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." **MPEP 706.02(j)** (Rev. 1 Feb. 21003) (citing *In re Vaeck*, 947 F2d. 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). First, *Schrock* is in fact directed to providing a catalyst for making "block copolymers of low Polydispersity" (Abstract) as the Examiner states, but this does not provide motivation, as the present invention is not so directed. Second, no element of *Liang* or *McConville* was cited by the Examiner for additional insight to one skilled in the art in how to combine two different catalyst components together in a polymerization process as the Applicant claims.

The *Liang* paper is a communication mostly directed to the synthesis of a particular compound, with one example of a 1-hexene polymerization using the synthesized compound alone with an activator. *McConville* expands on the use of similar compounds as supported olefin polymerization catalysts. Applicant contends that there is no motivation to combine these references with *Sugimura*, nor do these references teach one skilled in the art anything new that would alleviate the deficiencies of *Sugimura*.


The Applicant thus requests that this rejection be withdrawn.

It is submitted that the case is in condition for allowance. The Applicant invites the Examiner to telephone the undersigned attorney if there are any other issues outstanding which have not been presented to the Examiner's satisfaction.

Respectfully submitted,

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Date



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Attachment: English Language translation of Hei 10-330412 ("Sugimura")